SCIENCE:

A WEEKLY NEWSPAPER OF ALL THE ARTS AND SCIENCES.

PUBLISHED BY

N. D. C. HODGES,

47 LAFAYETTE PLACE, NEW YORK.

SUBSCRIPTIONS.—United States and Canada.....$3.50 a year.
Great Britain and Europe..... 4.50 a year.

Science Club-rates for the United States and Canada (in one remittance):

1 subscription 1 year..... $ 3.50
2 " 1 year..... 6.00
3 " 1 year..... 8.00
4 " 1 year..... 10.00

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VOL. XIII. NEW YORK, MAY 31, 1889. No. 330.

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NOW THAT THE PARIS EXPOSITION is attracting a great crowd of strangers to Paris, it is not without interest to note the excellent sanitary condition of that city. The mortality has at no time this year reached so small a figure as in the week ending May 4. The average for this week in the past five years has been 1,122. This year the mortality was only 984; and in the week following, it fell to 951. Typhoid-fever especially has shown, since 1888, a constant decrease. More than all others, this affection belongs to the list of diseases which may be avoided; and it is only necessary that there should be due energy on the part of the public authorities to reduce its frequency in a notable proportion. While typhoid-fever and varioloid have decreased, it is unfortunate to note that this is not true of measles and of diphtheria. This results, no doubt, from the fact that the measures which can stay the progress of these diseases depend more upon individual initiative than on public measures. Among the causes which may explain the improved health of Paris may be noted the increased use of the conveyances which are placed by the police at the disposal of those wishing to transport persons suspected of being affected with contagious diseases. In 1886 these carriages were called for only at the rate of thirty to forty per month. In 1888, in the month of April, this number had increased to 211; and in the April just passed, to 231. Another cause acting beneficially is doubtless the improvement in the quality of milk, — an improvement due to the constant control exercised by the city laboratory.

IN 1856, ISIDORE GEOFFROY-SAINT-HILAIRE, in a work of considerable importance on food-substances, and in particular on horse-flesh, wrote, "There are millions of Frenchmen who never eat meat, and each month there are millions of kilograms of good meat all over France turned over for industrial uses of secondary importance, or even thrown away." Since that time, and in a great measure as the result of the persevering efforts of Mr. Decroix, a retired military veterinarian, and to-day the honorary president of the Society for the Prevention of Cruelty to Animals in France, horse-flesh has entered in every part of France into every-day use. In Paris alone the number of horses slaughtered for food-purposes has risen since 1866 from 902 to 17,256 in 1888. The greatest consumption, as is well known, was during the years 1870 and 1871; but there has been a constant increase from 1872 on. In addition to the horses consumed, there are also a considerable number of asses and mules. From Paris the use of horse-flesh has extended into the provinces, and at this time there are in all the large cities of France slaughter-houses for the purpose. The animals are no longer allowed to die of disease or of old age after their usefulness as beasts of burden has come to an end, and it is claimed that a horse twenty years old in good condition is more tender than a young one if thin and hard-used. In the Department of the Seine alone, on the 1st of January, there were 132 establishments for the slaughter of horses. The price of horse-flesh is but little more than half of that of beef for the corresponding parts; and it is claimed by Mr. Decroix that horse-flesh is more healthy and more nourishing than that of beef, and that, in equally good condition, five pounds of beef are required to give the same amount of nourishment as four pounds of horse-flesh.

BAKING-POWDERS.

HENRY B. CORNWALL, Ph.D., professor of analytical chemistry at the John C. Green School of Science, Princeton College, has, during the past year, made analyses of the different brands of baking-powders sold in New Jersey, in order to determine their ingredients, the leavening power or strength of each, and the healthfulness or otherwise of the residues left in the bread after baking. A full report of the results will be found in the "Report of the Dairy Commissioner of New Jersey for 1888." Professor Mallett of the University of Virginia has recently completed an investigation of the baking-powders in general use, and his results are reported in full in the *London Chemical News* of Dec. 7 and 14, 1888. The whole subject of baking-powders has therefore been very thoroughly examined into by two competent and disinterested chemists; and the advantages and disadvantages of the different brands duly set forth in their reports. The opinions given in the report of Professor Cornwall are based on some 55 analyses of 39 brands of baking-powders, as follows: —

	Analyses.	Brands.
Cream-of-tartar and bicarbonate-of-soda powders	13	8
Phosphate-of-lime and bicarbonate-of-soda powders	7	4
Alum, phosphate-of-lime, and bicarbonate-of-soda powders	26	20
Alum and bicarbonate-of-soda powders	6	4
Unclassified	3	3

Large quantities of inferior baking-powder were found to be sold in bulk by manufacturers. This is put up in boxes by the retailer, and a fancy label affixed, he knowing nothing about the composition of the substance, its cheapness only concerning him. During the time the samples from Professor Cornwall's analysis were being completed, it was ascertained that some of the makers and dealers in the inferior grades of baking-powders joined with their business that of lottery or gift enterprise; and plates, cups, lamps, pewter casters, and other household goods, were given away with a certain number of cans, or a can of baking-powder was given with a certain quantity of tea or coffee. It was stated in one sec-

tion of the State that one enterprising manufacturer offered a wagon with each purchase of a certain number of cans.

In commenting on this report of Professor Cornwall, the dairy commissioner, Dr. Newton, says that from inquiries made in various parts of New Jersey, and from knowledge gained in conversation with those conversant with the habits of all classes of people, he should say that the use of baking-powders is confined to the preparation of biscuits, cake, and articles other than bread. The biscuit thus prepared is usually eaten hot, and constitutes a very large portion of the dietary of the working-people. In the homes of many of the wage-workers, this biscuit made with baking-powder is the usual form of bread used for at least two-thirds of the time; fresh, yeast-leavened bread being the exception. This, of course, does not obtain in the large cities, where bread is easily bought. It may be said, without fear of contradiction, that bread made by means of yeast is by far the most satisfactory and the most healthful of all the preparations of flour. It contains no residue about which there can be any controversy, it contains no added chemical; it retains, with but little change, the nutritive elements of the flour. Hence, while baking-powders may answer for occasional use, they cannot be recommended as a complete substitute for yeast, as their action is different from and the product dissimilar to that obtained from fermentation.

A baking-powder should answer to all of the following requirements: 1. It should generate the maximum amount of gas; 2. It should contain no unhealthful ingredients; 3. It should leave in the loaf no unhealthful residue; 4. The elements should be combined in such proportions that the residue is neutral in re-action.

Dr. Newton further says that the evidence is conclusive, and certainly points to these facts: that alum residue does affect digestion, and that these residues are more or less soluble, and are carried into the system. Hence it is suggested, that, if any person wishes to avoid a possible danger to health, he should refuse to buy alum-powders. It must be stated, however, that the evidence in the case is not as strong as with other chemical agents, and we cannot speak of the results following the constant ingestion of small quantities of the soluble alum compounds with the certainty that we do when considering lead and other toxic agents, which are poisonous when taken in very minute quantities and continuously. All that he can do officially, while there is yet doubt on this question, is to give the public the benefit of that doubt, and advise the use of these preparations with great caution until the problem is positively settled by experiments on the lower animals. As will be seen by reading Professor Cornwall's paper, some alum combinations are known to be dangerous to health: these he has indicated. He cautions the public that baking-powders sold by weight, and without any name on the package, are to be avoided, as any manufacturer responsible for his preparations will not be ashamed to print his name on the label.

In the introduction to his report, Professor Cornwall remarks, that although nothing is so well adapted as yeast for making a palatable and digestible bread, yet their greater convenience or the necessities of the case may sometimes be a reason for using baking-powders even for making bread, and they are very largely used in preparing various articles of food which largely take the place of bread. It becomes, therefore, a very important question to determine the probable effects of the many different kinds of baking-powders on the health of the consumer.

He explains the action of baking-powders as follows: The baking-powders render the bread[1] light, through the action of gas set free in the dough. This gas is almost exclusively carbonic-acid gas, the carbon dioxide of the chemist. The carbonic acid is set free from bicarbonate of soda by the action of some acid substance, which yields a part or the whole of its acid to the soda, thereby expelling the carbonic acid.

Carbonate of ammonia has been to some extent employed. This substance is solid at ordinary temperatures, and is converted into gas by the heat in baking, but is not alone suitable for a baking-powder, because it may easily remain to some extent in the bread after baking, imparting to it not only an unpleasant taste, but possibly, even probably, unwholesome properties.

[1] For convenience, the term "bread" will be used to include any articles made with baking-powders.

Formerly the cook made the baking-powder, when needed, by mixing in due proportions the two salts commonly used, — cream-of-tartar and bicarbonate of soda. The cream-of-tartar (bitartrate of potash) contains more of the tartaric acid than is necessary to neutralize the potash in it, and this excess of acid liberates the carbonic acid from the bicarbonate of soda. The re-action takes place only when the two salts become dissolved in the dough, and these salts were especially adapted to the purpose because they dissolve but slowly; so that there is a continual and gradual liberation of the gas, keeping the bread light until the baking is finished. Bicarbonate of soda is better than simple carbonate, also, because it yields twice as much gas.

There were serious objections to the old-fashioned process. Apart from impurities in the salts, which are quite as prevalent in some of the modern baking-powders, the cook needed to exercise unusual care in measuring the two salts, so as to avoid getting too much of one or the other; and quite as great care was needed to thoroughly mix the two, so that they might exercise their full action on one another, without which the familiar yellowish or brownish "soda" spots would be produced. A really well-made baking-powder obviates all the evils resulting from these causes, as well as from the use of impure or deteriorated materials.

The requisites of a good baking-powder are (1) that the ingredients, in the quantities used, shall not injure the health of the consumer; (2) that the powder shall yield the largest amount of gas that can be obtained from wholesome ingredients, and in such a way as to produce the best effects (boiled with water, it should give a neutral or very nearly neutral solution); (3) that the powder shall keep its strength, and also not cake or become lumpy under the ordinary conditions of storage and use.

The caking of the powder is due to the fact that some of the active ingredients are often of such a nature as readily to absorb moisture from the air, so that they partly dissolve, and not only cause caking, but also loss of "strength" through the escape of carbonic-acid gas. This evil is greatly reduced by the use of well-dried materials, and by the addition of dry starch-powder, wheat-flour, or similar farinaceous substance, so that a well-made powder loses very little strength. In good cream-of-tartar baking-powders, about twenty per cent of such a "filling" body is often used. More than this is unnecessary, and simply lowers the cost of the product. A little less is sometimes used. In the majority of alum-powders the strength is only one-third or one-half what it might be; and in many cases this is, no doubt, due to excess of the starch or flour thus sold at the price of baking-powder. It may be argued that the strength of the powders is purposely kept down to a standard that will permit the use of the customary "two teaspoonfuls."

The statements on labels, that a powder "is made from pure ingredients," has little significance, unless the ingredients of the powders are also given. An alum-powder may be made of pure alum; a mixed powder may contain pure bisulphate of soda and pure tartaric acid; even an acid-phosphate-of-lime powder may be made of pure materials, so far as concerns the addition of any adulterant by the compounder, and yet the acid phosphate may be full of sulphate of lime, originally present in it by the nature of the process of manufacture. Thus, a maker of baking-powder might be sending out an article containing much *terra alba* (sulphate of lime); and yet, because he knew he had not put in any *terra alba* as such, he would claim that his powder was pure.

Cream-of-Tartar Powders.

The cream-of-tartar itself is a natural constituent of grape-juice, and probably no material has ever been devised for making baking-powders that is open to less objection than cream-of-tartar, unless possibly the acid phosphates.

Acid-Phosphate-of-Lime Powders.

The acid phosphate of lime (also called superphosphate of lime) has of late been much used in baking-powders, and there seems to be no physiological objection to its use. Indeed, it is claimed that its use restores to the finest wheat-flour the phosphoric acid which is so necessary to our health, and which has been in great part removed with the bran. Other acid phosphates have been to some extent employed, but the acid phosphate of lime far the most

widely. Unless properly prepared, the acid phosphate may not be so unobjectionable a substance. It is made by acting upon ground bones with sulphuric acid. The result is sulphate of lime and the acid phosphate of lime. If, now, the latter, which is freely soluble in water, is leached out, leaving the sulphate of lime behind, we have the acid phosphate in fit condition to be used. It is mixed with starch, dried, and brought into the market as a cream-of-tartar substitute. Frequently, however, the sulphate of lime is left with the acid phosphate, and will then bring about any ill effects that may justly be attributable to the sulphate. Moreover, unless the sulphuric acid used has been carefully purified, it may bring no inconsiderable quantities of lead, and even arsenic, into the baking-powder.

Bisulphate of Potash and Soda Powders.

Bisulphate of potash has been to some extent used in baking-powders. Its ready solubility would render it unsuitable for use alone; but, when used, it has probably been for the purpose of securing a more rapid liberation of carbonic acid at first. Used with bicarbonate of soda, it leaves a residue of sulphate of potash and sulphate of soda; and the sulphate of potash is a very objectionable substance, if present in any considerable quantity. Stillé and Maisch say of it, "Formerly used as a purgative. It is so in smaller doses than other salines. Its action is apt to be harsh and burning in the abdomen." The dose is one-fourth to one-half ounce.

The sulphate of soda (Glauber's salt) is also an active purgative, very little used in England or in this country for administration to human patients, but it is used in Germany very largely in place of our more commonly employed sulphate of magnesia (Epsom salts). The dose of sulphate of soda as a purgative is one-half ounce to one ounce, from which it appears that it is a much more active drug than Rochelle salt.

Bisulphate of soda has been used in baking-powders, in combination with other acid principles. Its action on bicarbonate of soda results in a residue of sulphate of soda. The effects of such a residue will be referred to under alum-powders.

Sesqui-Carbonate of Ammonia.

Carbonate of ammonia, used in small quantities, is perhaps unobjectionable; but probably, if any considerable quantity were employed, disagreeable physiological effects might be expected, irrespective of the unpleasant odor and taste that the ammonia compounds would impart to the bread, which always shows ammonia re-action, even when small quantities only were used in making it. The ammonia salts in general appear to be much more irritating and stimulating than the corresponding soda or even potash salts. Stillé and Maisch say of carbonate of ammonia, "It is irritant, and if long continued, even in doses which the stomach will tolerate, it impairs nutrition." In doses of five to ten grains, it increases the fulness and force of the pulse, and causes a sense of tightness in the head. It is a very powerful agent. The ordinary dose is two to ten grains. Evidently, such a substance needs to be used with care in preparing foods.

Alum Baking-Powders.

Of late years the alum baking-powders, being more cheaply made, have come into extensive use, and have met with considerable opposition on the score of qualities alleged to be injurious to the health. The alum used in this part of our country is now almost exclusively burnt ammonia alum; and, since the potash alum is more expensive, the same is probably true of alum baking-powders in general. The crystallized alums are less frequently employed, because they are too easily soluble; but they may be used in connection with the burnt alum, to secure at first a more rapid escape of carbonic-acid gas. The alumina is present in the bread, partly as hydrate and partly as phosphate of alumina, in case simple alum baking-powders are used. Where acid phosphates are also used in sufficient quantity, the alumina remains in the bread as phosphate.

Professor Mallett regards it as a fair conclusion that not only alum itself, but the residues which its use in baking-powder leaves in bread, cannot be viewed as harmless, but must be ranked as objectionable, and should be avoided when the object aimed at is he production of wholesome bread.

Tartaric Acid and Tartrates in Alum-Powders.

The makers of alum baking-powders sometimes add tartaric acid or bitartrates to their powder, either with or without the addition of acid phosphate of lime. This is doubtless done with the best intentions, either to secure a more rapid escape of carbonic-acid gas at the outset, or otherwise improve the powder. Such additions in the case of several samples have been found, but the presence of tartaric acid or tartrates in alum-powders is very objectionable. If added in sufficient quantity to otherwise pure alum-powders, they prevent the precipitation of the insoluble hydrate of alumina entirely when the powder is boiled with water, and they may render much of the alumina soluble in water even after the bread is baked. Without doubt, it would then be readily soluble in the digestive organs, producing there the effects due to alum or any other soluble aluminum compound. Not even the boldest advocates of alum-powders have denied the injurious tendencies of soluble aluminum compounds in the bread.

Acid Phosphates in Alum-Powders.

The addition of acid phosphate to alum-powders can only be regarded as an improvement, provided the acid phosphate is free from sulphate of lime, lead, or other objectionable substances, and the powders are put up in truly air-tight packages. Otherwise the deterioration leads to the use of larger quantities of the powder, and often with the result of introducing larger quantities of the alumina compounds into the bread.

Results of Analysis.

The following tables give the results of analysis of the samples, so far as was necessary to classify them and determine their "strength;" that is, the percentage of carbonic-acid gas. The cubic inches of gas are given from one ounce avoirdupois of powder, at a temperature of 60° F., and barometer at thirty inches.

I. Cream-of-Tartar Powders. — In this class are placed all powders giving re-actions for tartaric acid and potash, and free from the phosphates, alumina, and any considerable quantity of soluble sulphates. Ammonia was sometimes present, whether as sesqui-carbonate or bitartrate was not determined. Free tartaric acid was found in one case. Its presence has no effect on the wholesomeness of the powder, nor has the small amount of ammonia in any case found. The writer's experience is that the powders free from ammonia compounds yield just as light biscuits, etc., as the others. As regards purity of materials, there seems little choice between the higher grades of these powders.

II. Acid-Phosphate-of-Lime Powders. — The first two of these were packed in tightly corked glass bottles, and contained enough starchy material to keep them from deteriorating in these bottles. The bread preparation consisted of two separate powders, each in a paper package. One was bicarbonate of soda; the other, acid phosphate of lime mixed with starch. The strength was determined on a mixture of the two in the proportions directed on the packages. The wheat-powder was put up in tin boxes, without starch or other filling. One sample was in excellent order; the other, much caked.

III. Alum and Phosphate Powders. — This class embraces powders showing ammonia, soluble sulphates, alumina, and phosphates, when tested as already described. Inasmuch as some of these powders showed considerable alumina in the simple water solution, a more detailed examination of them is recommended, for the reasons already given. The actual presence of acid phosphate of lime, or of any other acid phosphate, was not proven; but all contained some phosphate, and have therefore been classed as indicated, although probably in every case they were made with acid phosphate of lime. As already mentioned, the low grade of several is perhaps from deterioration, due to the presence of the acid phosphate in packages not sufficiently air-tight. Acid phosphate will not keep well when mixed with bicarbonate of soda, except in well-corked bottles. Tin cases are not tight enough. Many of these powders contained sulphate of lime, chemically equivalent to *terra alba*. This was, perhaps, in no case added as an adulterant, but was a part of the acid phosphate of lime used; the latter not having been separated from the sulphate of lime formed in its

manufacture. The presence of this sulphate of lime must be regarded as objectionable. None of these powders are as strong as they might be made, and most of them are very deficient in strength. Apart from questions of healthfulness, there can be no economy in buying some of these powders.

IV. Alum-Powders. — Here are classed the powders showing the same re-actions as the preceding class, but free from phosphates. All appeared to be ammonia alum-powders, but re-actions for potash and tartaric acid were not wanting among them. Only one of them begins to come up to the strength which a "straight" burnt ammonia alum-powder might have.

V. Unclassed Powders. — The composition of these is such as to present their coming under any of the previous heads.

I. Cream-of-Tartar Powders.

Analyst's Number.	Brand.	Carbonic-Acid Gas, Per Cent.	Cubic Inches Carbonic-Acid Gas, Per Ounce.	Remarks.
4	The Best	11.60	107.3	
5	Sea Foam	10.86	100.5	Yields a little ammonia and soluble sulphate.
23	Sterling	11.70	108.2	Yields ammonia re-actions.
29	Health	6.96	64.4	Final re-action of aqueous solution strongly alkaline.
50	Health	7.25	67.1	
39	None Such	12.64	116.9	
40	Cleveland's	13.27	122.7	Received in June.
43	Cleveland's	13.82	127.8	Received in November.
41	Royal	13.56	125.43	Yields ammonia re-actions. Received in May.
42	Royal	13.06	120.8	Yields ammonia re-actions. Received in November.
45	Price's "Cream"	11.95	110.5	Received in May. Contains free tartaric acid.
53	Price's "Cream"	12.20	112.9	Received in December.
	Average (8 brands)	11.60		Excluding 29 and 50, average is 12.46 per cent of carbonic acid.

II. Acid-Phosphate-of-Lime Powders.

Analyst's Number.	Brand.	Carbonic-Acid Gas, Per Cent.	Cubic Inches Carbonid-Acid Gas, Per Ounce.	Remarks.
46	Horsford's Phosphatic	14.95	138.3	Received in August. In eight-ounce glass bottle.
54	Horsford's Phosphatic	14.01	129.6	In retail dealer's stock one year. A little gas escaped on opening the four-ounce bottle.
47	Rumford's Yeast-Powder	13.51	125.0	Received in May. In eight-ounce glass bottle.
48	Rumford's Yeast-Powder	13.89	128.5	Received in August. In eight-ounce glass bottle.
49	Horsford's Bread Preparation	15.39	142.4	Received in August. Bicarbonate of soda and acid phosphate put up in separate papers. The acid phosphate was not quite free from soluble sulphates
21	Wheat	15.62	144.5	In tin box; in good order.
52	Wheat	5.83	53.9	In tin box; much caked.

III. Alum and Phosphate Powders.

Analyst's Number.	Brand.	Carbonic-Acid Gas, Per Cent.	Cubic Inches Carbonic-Acid Gas, Per Ounce.	Remarks. (All give Ammonia Re-actions.)
1	Patapsco	8.32	77.0	
2	Washington	8.81	82.5	Received in May.
27	Washington	9.97	92.2	Received in November.
3	Davis' O. K.	8.99	83.2	
7	McDowell's G. & J.	9.70	89.7	
9	Lincoln	9.73	90.0	
10	Kenton	7.01	64.8	Received in October. Another sample, received in May, gave 3.81 per cent.
11	State	6.70	62.0	Received in October.
15	State	8.42	77.9	Received in May.
13	On Top	9.17	84.8	
16	Perfection	5.09	47.1	In paste-board box with tin ends.
19	Silver Star	9.51	88.0	
24	Our Own	10.47	96.8	
35	White Star	10.09	93.3	
28	Somerville	8.39	77.6	
30	Grape	10.02	92.7	
31	Sovereign	8.96	82.9	
32	A. & P. (Atlantic & Pacific)	8.97	83.0	
33	Higgins	6.63	61.3	Received in September.
51	Higgins	11.30	104.5	Received in December.
34	Windsor	8.77	81.1	
37	Brooks & McGeorge	10.16	94.0	
38	Henkel's	10.24	94.7	
	Average (20 brands)	8.97		

IV. Alum Powders.

Analyst's Number.	Brand.	Carbonic-Acid Gas, Per Cent.	Cubic Inches Carbonic-Acid Gas, Per Ounce.	Remarks. (All show Ammonia Re-actions.)
8	Miles' "Prize"	9.63	89.1	Shows potash re-actions, and reduces silver abundantly.
20	Four Ace	10.31	95.4	
26	Feather Weight	9.63	89.1	
36	One Spoon	16.77	155.1	Two other samples gave respectively 15.35 and 16.73 per cent.

NOTE. — Since the rapidity with which a baking-powder gives off carbonic-acid gas in the cold varies with the ingredients used, it was deemed worth while to test some powders as follows: Forty-five grains (three grams) of each was mixed, with as little shaking as possible, with one-sixth ounce (five cubic centimetres) of water, and the volume of gas evolved in five minutes was measured.

Cleveland's yielded	49.6	per cent	of its	carbonic acid.
Royal	" 45.6	"	"	"
Horsford's	" 68.8	"	"	"
A "straight" burnt alum powder	" 6.3	"	"	"

V. Unclassed Powders.

Analyst's Number.	Brand.	Carbonic-Acid Gas, Per Cent.	Cubic Inches Carbonic-Acid Gas, Per Ounce.	Remarks.
6	Silver Prize.....	8.14	75.3	Shows potash and ammonia re-actions, and reduces silver abundantly.
22	Orange.....	8.00	74.0	Contains a soluble alumina compound.
18	Our Best.....	6.15	56.9	Shows ammonia re-actions; contains much soluble sulphate and some free tartaric acid.

Professor Cornwall says, in conclusion, "Our investigations show, that, while especially the higher grades of cream-of-tartar and acid-phosphate-of-lime powders are maintained at a quite uniform standard of excellence, the State is flooded, also, with many baking-powders of very poor quality, — cheap goods, poorly made. Of the thirty-nine brands examined, twenty-five contain alum or its equivalent, in the shape of some soluble alumina compound; eight are cream-of-tartar powders, with small quantities of other ingredients in several cases; four are acid-phosphate-of-lime powders; two belong properly under none of the above classes.

"With one exception, the powders containing alum all fall below the average strength of the cream-of-tartar powders, and in the majority of cases they fall much below the better grades of the cream-of-tartar powders.

"In the cream-of-tartar and the acid-phosphate-of-lime powders, no indications of substances likely to be injurious to health, in the quantities used, have been found.

"More evidence against the use of alum in baking-powders might have been presented, but it would have been of a similar nature to that which has already been given. In the writer's opinion, the presence of alum in baking-powders is objectionable, since, under certain conditions, it may exert an injurious effect on the digestion. The effects may not be very marked in the case of any individual consumer; but that they can be induced to a greater or less extent, seems to be well established.

"There appears to be ample ground for requiring that the makers of baking-powders should publish the ingredients used in their powders, in order that the consumer, who may justly have doubts of the desirability of using certain kinds, may be protected. At present the only guaranty of an undoubtedly wholesome and efficient article appears to be the name of the brand.

"Moreover, since it is quite possible to put up the baking-powders in such a way as to preserve their strength very thoroughly, and since it is evident that many makers fail in this respect, it would not seem unreasonable to require that baking-powders should not be sold unless they will yield a certain percentage of carbonic-acid gas. The bad effects of the 'heavy food' prepared with some of the baking-powders among our samples must certainly be felt by those who use them, and who are yet too ignorant to know where the trouble lies. It is for this class especially that nearly all legislation relating to securing good food and drugs is enacted.

"Since it is evident that some of the alum-powders are so prepared as to increase the extent of any injurious effect, owing to the mixture of ingredients whose combination cannot be justified on any grounds, it is recommended that a special and more thorough examination of such be made, with a view to preventing their manufacture."

THE MINERAL WEALTH OF BRITISH COLUMBIA.

IN 1877, Mr. George M. Dawson prepared, in connection with the Canadian Government Surveys for the Canadian Pacific Railway, a general note on the mines and minerals of economic value of British Columbia, which was published in the "Railway Survey Report" for that year, and was afterwards reprinted, with some additions, in the "Report of Progress of the Geological Survey for 1877–78." Since that time great changes have occurred in respect to the aspects of mining in British Columbia, and important additions have been made to our knowledge of its mineral resources and geology. In view of these, and the increasing interest now manifested in the development of the natural resources of the province, and the numerous inquiries constantly received on that subject, it appeared to be desirable to place the available information respecting its mineral wealth in the hands of the public in a summarized form. With this object in view, Dr. Dawson began the revision of the publication first referred to, but soon found, that, in order to obtain a reasonably satisfactory result, it would be necessary practically to rewrite the whole. The work has in consequence assumed proportions larger than were at first contemplated, and now appears as "The Mineral Wealth of British Columbia" (Montreal, Dawson Brothers), with an annotated list of localities of minerals of economic value.

The object of this publication is twofold. It is, in the first place, intended to serve in some measure as an exponent of the mineral wealth of the province to which it refers; to provide an answer of a general kind to the inquiries now so frequently made on this subject; and to collect for this purpose, in a convenient form, brief summaries of the facts contained in the several official reports on the geological features of the province, with specific references to the pages in which they are treated of at greater length. In the second place, it is designed to place in the hands of the "prospector" or miner a convenient synopsis of facts, with a list of localities likely to be of interest to him. In the endeavor to carry out this second purpose, it has been considered advisable to add notes on such general principles, and to advance such suggestions, as, from the study of the geological features of the province (dating from 1874), appear to be of importance, and likely to be of service at the present time in guiding the search for or exploitation of its metalliferous deposits. In further pursuance of this object, some facts resulting from late practice and investigations in other mining regions are alluded to, and their application to the problems of development in British Columbia is briefly noted.

While the important developments now in progress in the province appear to call for the present publication, it is to be anticipated that within a short time any thing that can now be said regarding vein-mining will be relegated to a position of merely historical interest.

The province of British Columbia, with an area of 390,344 square miles, includes a length of over 800 miles of the Cordillera belt of the West Coast, — a region of mountains and of geological disturbance, which, in this part of its extent, between the Pacific Ocean and the elevated western margin of the Great Plains, has a breadth averaging about 400 miles. This great mountain region extends north-westward and south-eastward, and constitutes the effective cause which has produced the similar trend of the Pacific coast between the same parallels of latitude. It represents the northern continuation of the most important metalliferous area of the United States, essentially repeating its main orographic features, though presenting also some notable differences of a general kind, as well as many local peculiarities.

The Cordillera belt, in British Columbia, may be described as comprising four great mountain systems or principal axes of uplift and geological disturbance, which are, in the main, nearly parallel to each other and to the coast, — the Rocky, the Gold, the Coast, and the Vancouver ranges.

The Rocky Mountain range proper is the farthest inland, and has an average breadth, in its southern part, of about sixty miles, but is decreased near the Peace River to forty miles or less, and apparently loses its importance and regularity locally where cut through by the Liard, though recovering both still farther to the north-westward. Near the 49th parallel, several summits occur in this range which exceed 10,000 feet in height; but northward few attain this elevation till the headquarters of the Bow River are reached. About the sources of the North Saskatchewan and Athabasca, the range appears to culminate, and Mounts Brown and Murchison occur, with reputed heights of 16,000 and 13,500 feet respectively. Near the Peace, few summits exceed 6,000 feet, so far as known. Though more or less extensive snow-fields occur in many